

Application No. 10/779,963

REMARKS

Claims 1-30 are pending. By this Amendment, claims 1, 11 and 21 are amended.

Claims Rejections Under 35 U.S.C. §112, first paragraph

The Office Action rejected claims 1-20 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement.

The Office Action rejected claims 1-20 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement. While Applicant respectfully disagrees that applicant has introduced new matter to the application and reserves the right to prosecute similar claims in a future continuing application, in order to advance prosecution, applicant has cancelled the alleged new matter from the claims.

The Office Action rejected claims 21-30 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicant has cancelled the matter alleged to lack written description.

Applicant respectfully requests that the Examiner withdraw the rejections.

Claim Objections

The Office Action objected to claims 1-30 indicating that the claims are incomplete for omitting the structural cooperative relationships “between the superimposing unit and the image generating device” in claims 1-20 and between “the first and second beam splitters” in claims 21-30. By this amendment applicant has amended claims 1, 11 and 21 to include the limitations “wherein, said first beam splitter deflects light coming from the image

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generating device to said second beam splitter which in turn deflects the light to the viewer, and wherein the light coming from the object is transmitted through said second beam splitter to the viewer." Applicant believes that this amendment makes express the structural cooperative relationships that the Office Action indicates are lacking. Applicant believes that the claims as amended, read along with the description in the specification, would allow one of ordinary skill in the art to practice the invention. Applicant respectfully requests that the Examiner withdraw the rejections.

Claims Rejections Under 35 U.S.C. §103(a)

The Examiner rejected claims 1-9 and 11-30 as being unpatentable over the patent issued to Ferguson (U.S. Patent No. 6,379,009) in view of Pioscnka et al. (U.S. Patent No. 5,359,444).

The Examiner rejected claims 1, 4-7, 10, 11, 14-17, 20, 21, 24-27 and 30 under 35 U.S.C. §103(a) as being unpatentable over the patent issued to Ferguson (U.S. Patent No. 6,379,009) in view of Baba et al. (U.S. Patent No. 4,802,746).

By this amendment, Applicant has amended claims 1 and 11 to include the limitations "wherein, said first beam splitter deflects light coming from the image generating device to said second beam splitter which in turn deflects the light to the viewer, and wherein the light coming from the object is transmitted through said second beam splitter to the viewer." The prior art of record in the application does not disclose or suggest these limitations in combination with the other limitations in claims 1 and 11. Therefore, claims 1 and 11 as amended are now patentable over the prior art of record in the application. Claims 2-11 depend from claim 1 and should be patentable for the same reasons as claim 1. Claims 12-20 depend from claim 11 and should be patentable for the same reasons as claim 11. Applicant respectfully requests that the Examiner withdraw the rejection.

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With regard to claim 21-30, the Fergason reference does not address the problem of focusing. Fergason only discloses that the projected image is overlaid on an actual view of an object, the image being identical to the actual view in size, shape and scale, and being perfectly registered with the actual view, e.g. as to position or location (column 2, lines 1 to 5).

To one of ordinary skill in the art it is apparent that there is no need in Fergason for a focusing unit since all embodiments described are for night vision devices utilized by pilots for landing or for flight to an area that is in relatively darkness. In these circumstances, the minimum distance between the object and the viewer is at least 10 meters. At this distance the ocular accommodation required for a clear view is only 0.1 diopter greater than viewing a far distant object.

Therefore, Fergason only teaches adapting the size of a projected image to the actual view of the object since the size strongly differs for an object located at a distance of 10 meters compared with an object at 10.000 meters. Since there is no need in Fergason to provide a focusing unit, the image projector of Fergason does not implicitly include a focusing unit.

Piosenka and Baba teach away from the invention for the reasons indicated below. In the present invention, the refractive index of the lens of the focusing unit is used to alter the distance from the viewer to the image plane (the plane in which the image presented by the image generating device) to match the distance between the viewer and the object plane (the plane in which the real object is present).

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If the viewer and/or the object moves (which leads to a change of distance between the viewer and the object plane) the distance of the image plane is adapted to the altered distance between the viewer and the object plane by adjusting the refractive index of the lens.

Therefore, the variable refractive index lens is not used to provide a sharp image of the real object for the viewer. The viewer accommodates his eyes to view a sharp image of the real object. In addition, only if the viewer accommodates his eyes is he able to have a sharp view of the image generated by the image generating device. The variable refractive index lens adjusts to cause the optical distance from the viewer's eye to the image to coincide with the physical distance from the viewer's eye to the object thus bringing them into simultaneous focus.

In contrast thereto, Piosenka teaches use of a lens having a variable refractive index such that the viewer need not change the accommodative status of his eyes when the distance between the viewer and the object being viewed is changed (cf. column 10, lines 11 to 25). This is done to compensate for the normal loss of accommodation that occurs with age (presbyopia) (column 1, lines 16,17).

Therefore, Piosenka teaches a lens having a variable refractive index; combined with a distance measuring system to adapt the refractive power of the lens so that the viewer need not change accommodation when the distance between the object to be viewed and the viewer is changed. The present invention, by contrast, locates the object and the image in a common plane so that the viewer can accommodate to that plane and see both image and object in simultaneous clear focus.

In addition, Baba teaches use of a variable-focus optical element to maintain a sharp image of an object to be detected on an image sensor (abstract on the cover page of Baba).

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However, this is completely different than the use of the lens having a variable refractive index according to the present invention.

With further reference to independent claim 21, neither Piosenka nor Baba teach or suggest a first and a second independent beam path substantially adjacent the first beam path nor the limitation amended into claim. Thus, claim 21 and the claims that depend from claim 21 are not obvious in view of Fergason, Piosenka, Baba or any combination thereof.

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CONCLUSION

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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